Due: Wednesday, October 11

# HMC Math 142 Fall 2017

Prof. Gu

# Problem Set 6

Start this assignment before Sunday night!

## Read:

- Baby Do Carmo, Differential Geometry of Curves and Surfaces: Sections 2-4, 2-5, 2-6 and Section 5-10 on Abstract surfaces (starting on page 425)
- Handouts 8 and 9
- Lecture Notes

## Do: Please choose one of the following

1. Choose a project of your preference. Write 2 pages of your work of the project that could be background sections, introduction, development or implementation of an algorithm or a model, some theorems, etc. Identify at least one or a couple research articles.
2. Choose to work on homework problems. Work on part B, and choose 3 problems that interest you from part C to write up. Keys for part C are attached in resources.
3. Choose half and half. Choose two problems from choice 2 (you can either choose 2 problems from part C or you can choose 1 problem on part C and works out the problem in part B ) and one page of work on choice 1

### B: Problems from Lectures

- a) Find five examples of regular surfaces such that each of them can be represented as a surface of revolution. Write down specifically for each example the generating curve, the rotation axis, and the parameterization (as a map) for the surface (including the domain of the map).

**C: Problems to choose from**

- a) Problem 10 on page 81, Section 2-3, Baby Do Carmo.
- b) Problem 9 on page 89, Section 2-4, Baby Do Carmo.
- c) Problem 15 on page 90, Section 2-4, Baby Do Carmo.
- d) Problem 18 on page 90, Section 2-4, Baby Do Carmo.
- e) Problem 1 on page 99, Section 2-5, Baby Do Carmo.
- f) Problem 3 on page 99, Section 2-5, Baby Do Carmo.
- g) Problem 9 on page 100, Section 2-5, Baby Do Carmo.